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ABSTRACT

This guide examines how students with mild handicaps can use technology effectively in their learning. The guide focuses on how a teacher adapts classroom lessons for mildly handicapped learners by structuring and organizing lessons, by using options available with the technology, or by choosing programs. The guide focuses on those students who are instructionally integrated for academic subjects or mainstreamed at the middle or high-school level. It outlines student needs; the role of the teacher; and types of computer technology as content-specific software, telecommunications, and interactive videodiscs. The guide concludes with a list of networks, readings, software, and videodiscs. (JDD)

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Center for Special Education Technology

Tech Use Guide

Using Computer Technology

ED 339151

Mildly Handicapped

Everybody is using technology! Students and teachers are enthusiastic about computer programs, telecommunications projects, and interactive video programs. How can students with mild handicaps be a part of this new age? Can this technology be adapted so that it is an effective way of learning for them?

This guide broadly answers those two questions. It does not deal with hardware or adaptive devices. Rather it focuses on how a teacher adapts classroom lessons for mildly handicapped learners by structuring and organizing the lesson, by using the options available with the technology, or by choosing from a variety of programs.

Students with mild handicaps may be mentally handicapped, learning disabled, or may have behavioral or emotional disorders. They may be hyperactive or have attention deficits. This guide focuses on those students who are instructionally integrated for academic subjects or mainstreamed at the middle or high school level.

Student Needs

We know that orderly, sequential presentations help these students achieve. It is important when teaching students with mild handicaps to help them organize the material. Use of meaningful content, thoroughly taught, leads to mastery. Monitoring students' learning confirms this mastery. The computer and other technology can help accomplish this.

Advantages From Technology

Technology use affects classroom behavior, student attitude, and achievement. Students stay on-task longer, because the programs stimulate them visually and increase their motivation to learn. Students select some commands and sequence parts of the program. This feeling of being in control can increase their self-concept. The technology often structures, monitors, and questions while students are engaged in learning, thus offering both continuous feedback and a reminder to the students that they are accountable. All of this produces a good success rate with an increased amount of learning.

Role of the Teacher

Choosing the appropriate technology and program involves checking the IEP goals and student characteristics. To implement the IEP goals, the learning gained from the program needs to match the curriculum goals and objectives. These goals and objectives will generally involve knowledge and skills in basic, academic, occupational and independent living areas. To match the student's skill level and individual ability to the software program it may be possible to set the pace and level of the program.

It is essential that teachers using technology prepare by reviewing the selected program and practicing with it. By becoming knowledgeable about the program, it can be actively integrated with the rest of the classroom activities. The skills to be learned, the motivation for the lesson, and the content needs to be introduced.

Following this, the program can be introduced to the student. Students with mild handicaps may need more direct teacher instruction before they can use a program. To do this efficiently, first analyze the student's behavior and learning goals, ascertain what the student knows, and then train the student to use the program. After the student uses the program, the teacher should provide opportunities for the student to generalize the learning. Review is also essential. The student should use the program more than once, even overlearning the material.

Computer Technology

Software Tools. Word processing, databases, and spreadsheets are helpful educational tools especially for students with handicaps. The benefits of word processing have been repeated often: a sense of authorship, easy revisions without recopying, and neat printed copies.

When assigning writing on the computer, consider the student's cursor skills. Keyboarding may be difficult and inefficient so instruction and practice of keyboarding skills may be a vital first step. Include 5 minutes of practice daily with teacher monitoring. If a software program is used, it should not emphasize timed games as these often cause handicapped students to focus entirely on the game, forgetting any home key orientation.

These students also need teacher guidance to generate and organize ideas. Otherwise their papers may have much editing but shallow content. Modeling the planning and prewriting stages with the whole class may be an effective way to show handicapped students how to begin. Listing of criteria needed for the writing piece may show students how to organize and plan the writing. For

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example, an opinion essay may include the steps of stating the topic, reasons, examples, and an ending. Programs such as *Writing A Narrative* improve the quality of writing as they structure writing assignments. Writing to a pen pal gives students a reason for writing, and The National Learning Disabilities Network has a pen pal club which matches LD students with others of the same age and ability across the nation.

Databases and spreadsheets enhance communication, organize information, and assist students in classifying information, observing, showing commonalities, and relationships.

Use of databases makes learning facts more interesting, as well as helping students develop concepts and make comparisons. By working gradually, students can increase database skills. They begin by entering data in a file that can later be retrieved and arranged. The next assignment allows students to design the fields for a new file. Once the mechanics are learned, the focus should be on information contained within the database. Databases such as *World Geograph* help students with organizing information about countries.

Spreadsheets help students plan, analyze, and make decisions. Modeling and demonstrating the program, as well as a list of step-by-step instructions can lead to self-reliance. When a problem arises, peer assistance can be particularly helpful.

Prepackaged or teacher-prepared spreadsheets help students with budgeting, balancing a checkbook or paying bills. To provide practical experience have the students:

- Keep track of expenses.
- Chart an exercise program.
- Determine statistics and scores of a sports team.

The variety of computer software programs increases almost daily. While drill and practice give patient help in learning basic skills, the mildly handicapped child's experience should not be limited to drill and practice. Likewise, do not limit software to word processing, but consider what other programs fit in with the content of your instruction. An integrated program, such as *AppleWorks* or *Microsoft Works* has word processing, a database, and a spreadsheet. In an integrated program, commands are similar and usually easier to learn than the commands from three different programs published by three different companies.

Reference and Study Skills. CD-ROM discs of databases are helpful in locating information. Assignments in science, health, English composition and literature, and speech classes may require research, an ideal use of CD-Rom discs such as *Grolier's Academic American Electronic Encyclopedia*. Ease of use and fast location of information with menu searching are motivating to students. The process also gives students practice in online searching which may be used in telecommunications.

A worksheet which leads students to write their general topic, describe what they want to research, key words or descriptors to use, and specific words to narrow the topic help them get started. Follow up the experience with students writing the actual search statement used, the databases used, and comments about the usefulness of the information.

Computer outliners are programs that enter and move information or ideas into headings and subheadings. As a study tool, an outliner can increase student comprehension and retention of information. These programs automatically indent subheadings and allow information to be easily rearranged. Students concentrate on identifying important ideas and writing summary statements. *Thinkworks*, *MORE II*, and *Think Tank* are examples of outline software. *Inspiration* is a semantic mapping program which gives a visual view of the topic, main ideas, and details in boxes; and then, on command, will move it into an outline format.

Content-Specific Software. Software programs in the areas of language arts, math, science, and social studies are used by non-handicapped students as well as those with mild handicaps. To facilitate their success, spend time at the beginning introducing the programs and making sure the instructions are clear. Structuring the student's time at the computer is also helpful. After the student has worked at the computer, help the student make connections with the work just completed and other situations in the real world where the learning might be transferred.

Well-designed instruction will present useful and meaningful content in software programs just as it does in classroom lessons. For example, *DLM Math Fluency Program* gives new facts one at a time with systematic practice. Assessment and feedback on progress help secure new learning to the student's existing knowledge.

Software simulations enhance rather than replace the regular curriculum. For example, dissecting a frog in biology needs to be done while using *Visifrog* software. Likewise, *Biology Series* will enhance biology classes with simulations, animation, and examples. Questions that check understanding make each student an active learner. Again a structured approach preceded by direct instruction will make the learning most efficient.

Students with mild handicaps can benefit from and should have the opportunity to use this software, the same as nonhandicapped students.

Telecommunications

Telecommunications is another way to communicate. Hooking up with a student in London or with someone in a neighboring school gives students a wider view of the world. Geography comes alive as students may want to know more about where they live, since they often begin by describing their own community to their new pen pals. Students use research skills to locate the place where the pen pal lives.

Research has shown students carefully work on the material they send to others through telecommunications. Writing skills also improve when students have a real audience. Using electronic mail and bulletin boards throughout the world strengthens the concept of the global village. Everyone seems so much closer, and geography, culture, and writing skills are relevant. One way students can send electronic mail throughout the country is to use KIDS.TALK, a SpecialNet bulletin board which pairs up mildly disabled students with each other.

Interactive Videodiscs

Helping students learn better may mean combining the communication of video with the interactivity of computers found in an interactive videodisc. These discs include motion video, still pictures, graphs, charts, cartoons, and sound linked with text. Students are active learners and can feel in control of their learning. In this multi-media presentation the learner with reading problems has another way to learn. The content has rich mental models seen through a visual medium. A variety of instructional objectives are possible with one program. The program can be individualized and self-paced with much feedback and reinforcement. Record-keeping can be provided.

Videodiscs can be used for direct instruction, instructional support, or independent research. Modeling the strategies necessary to use the program and to learn the material prepares students when they begin to use the programs on their own. With teacher guidance and discussion, the examples and simulations help mildly handicapped students generalize and apply what they have learned. Students viewing the *Jasper Woodbury Learning Series* are challenged to use their skills to find solutions to real life problems.

Excitement for interactive video flourishes among those who have access to the technology. The number of excellent interactive video programs is growing. Consider teaching social studies with *Martin Luther King*, *Vote 88*, or *GTV: A Geographic Perspective on American History*. All of these make history come alive. Students who won't or can't read the text will become engrossed in the action. Other examples of interactive video programs are included in the reference section of this paper.

Networks

National Learning Disabilities Network. A nationwide pen pal club for students who are learning disabled. 82 South Townline Road, Sandusky, MI 48471, 313/648-2125. Contact Bruce and Debbie Irland.

KIDS.TALK, SpecialNet Bulletin Board. Bulletin board for students to communicate with their peers in distant cities and states. GTE Education Services, Suite 600, 8505 Freeport Parkway, Irving, TX 75063. 800/634-5644.

Readings

Male, Mary. *Special Magic* (1988). Mayfield Publishing Company, 1240 Villa St., Mountain View, CA 94041.

Software

AppleWorks 3.0. Available for Apple. Claris Corporation, 5201 Patrick Henry Dr., Box 58168, Santa Clara, CA 95052, 408/987-7000.

Biology Series: Human Life Processes I, II, and III, and *The Environment I and II*. Available for IBM. IBM Corporation, Direct Response Marketing, Dept. TR, 101 Paragon Dr., Montvale, NJ 07645, 800/IBM-2468.

DLM Math Fluency Program. Available for Apple. DLM Teaching Resources, P.O. Box 4000, One DLM Park, Allen, TX 75002, 800/527-4747.

Inspiration. Available for Mac. Ceres Software, 9498 SW Barbur Blvd., Suite 103, Portland, OR 97219, 503/245-9011.

Microsoft Works. Available for Mac and IBM. Microsoft Corporation, 16011 N.E. 36th, Box 97017, Redmond, WA 98073, 800/426-9400.

MORE II. Available for Mac. Symantec, 10201 Torre Ave., Cupertino, CA 95014, 408/253-9600.

Think Tank 512. Available for Mac and IBM. Symantec. See MORE II.

Thinkworks. Available for Apple II. K-12 Micro Media Inc., 6 Arrow Rd., Ramsy, NJ 07446, 201/825-8888.

Visifrog. Available for Apple, Mac, and IBM. Ventura Educational Systems, 3440 Brokenhill St., Newbury Park, CA 91320, 805/499-1407.

World Geograph. Available for Apple GS. MECC, 3490 Lexington Avenue North, St. Paul, MN 55126, 612/481-3500.

Writing a Narrative. Available for Apple. MECC, 3490 Lexington Avenue North, St. Paul, MN 55126, 612/481-3500.

Videodiscs

GTV: A Geographic Perspective on American History. This program contains a comprehensive view of American history with video, still pictures, and maps. Produced by National Geographic, Lucasfilms, State of California, and Apple Computer. Distributed by Optical Data Corp., 30 Technology Drive, Warren, NJ 07060, 800/524-2481.

Interactive NOVA: Animal Pathfinders. A natural science videodisc application with footage from the NOVA science series. Includes overviews (narrated film segments), a database (about animals, habitats and behavior), activities, and resources. Runs with Hypercard stacks. WGBH Educational Foundation and Peace River Films, 125 Western Ave., Boston, MA 02134, 617/492-2777.

In the Holy Land. A program about "the history of turmoil and conflict in the Middle East." It includes recent and historical video, map, timeline and textual information about the religions, geography, and politics of the Holy Land. It features a video "documentary maker", print directory, video lesson plans and supplemental material. Runs with Hypercard stacks. ABC News Interactive, 7 West 66th St., New York, NY 10023, 212/887-4060.

Jasper Woodbury Learning Series. Math problem-solving hypermedia designed for the 4-6 grades. Video presents an adventure and all the information needed for students to solve a problem. Runs with Hypercard stacks. Learning Technology Center, Peabody College at Vanderbilt University, Box 45, Nashville, TN 37203, 615/322-8070.

Martin Luther King Jr. This program contains documents, speeches, file video, biographies, and other historical and current information about the Civil Rights Movement, racism in America today, and the life and death of Dr. Martin Luther King, Jr. It includes a video "documentary maker", and audio tracks in English and Spanish. Runs with Hypercard stacks. ABC News Interactive. See *In the Holy Land.*

The New Grolier Electronic Encyclopedia. This 20 volume encyclopedia is a query-based package with the ability to save and print articles. The program enables users to link quickly to articles on topics related to the chosen subject. Grolier Electronic Publishing, Inc., Sherman Turnpike, Danbury, CT 06816, 203/797-3530.

Vote 88: The Campaign for the White House. A videodisc application covering the primaries, the Republican and Democratic campaigns, and the results of the 1988 presidential election. Information about issues, debates, commercials, news footage, and opinion polls is presented. Program features include a video "documentary maker." Runs with Hypercard stacks. ABC News Interactive. See *In the Holy Land.*

Voyager Gallery, Space Disc Volume I. This disc contains views of Jupiter, Saturn, Uranus and their satellites taken by the Voyager spacecraft. Diskettes for Hypercard, AppleWorks, and PC compatibles. Optical Data Corporation. See *GTV A Geographic Perspective on American History.*

TLTG Physical Science Course. This is a complete two-semester physical science course for 9th and 10th grade levels developed with the Texas Association of School Boards. IBM InfoWindow software, 15 videodisc sides, a teacher resource guide, and student manual (summary notes, practice sets, and lab activities) are included. Texas Learning Technology Group,P.O. Box 2947, Austin, TX 78769-2947, 800/252-8206.

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